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| 10/531,672      | 09/14/2005  | Alastair Robert Buckley | BHJ9USA             | 1913             |

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| EXAMINER |
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LIN, JAMES

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| ART UNIT | PAPER NUMBER |
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1762

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
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| 3 MONTHS                               | 04/06/2007 | PAPER         |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/531,672

Applicant(s)

BUCKLEY ET AL.

Examiner

Jimmy Lin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 29-32 and 34-58 is/are pending in the application.
- 4a) Of the above claim(s) 3, 4, 29-32, 37-39, 41, 42, 47, 48, 50, 55 and 58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 34-36, 40, 43-46, 49, 51-54, 56 and 57 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 9/14/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Group I, claims 1-4 and 34-57 in the reply filed on 1/26/2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 3-4, 29-32, 37-39, 41-42, 47-48, 50, 55, and 58 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 1/26/2007.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roitman (U.S. Patent 5,972,419) in view of Unger et al. (U.S. Patent 6,408,878) and Kashiwabara (U.S. Publication 2002/0072139).

Roitman discloses a method of making an electroluminescent (EL) display (abstract). Protective material 131 is formed on the substrate and patterned to form well-defined regions that has access to the substrate. EL material is deposited into the well-defined regions (col. 3, lines 30-36; Fig. 2). The protective material is subsequently removed (col. 3, lines 51-52).

Roitman does not explicitly teach that removal of the protective material is done by dissolution in a solvent. However, Roitman teaches that the protective material can be a photo-resist material (col. 3, lines 33-34). Accordingly, Unger teaches that it is well known to use solvent to remove photo-resist material (Fig. 10, lines 4-7). It would have been obvious to one of ordinary skill in the art at the time of invention to have removed the protective material of

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Roitman via a solvent dissolution process with a reasonable expectation of success because Unger teaches that solvent dissolution is an operable method of removing photo-resist materials. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Roitman and Kashiwabara do not explicitly teach that the solvent is soluble in the protective material while insoluble in the EL material. However, Kashiwabara teaches that the use of a photo-resist solvent that does not dissolve the EL materials is advantageous [0055]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a solvent that dissolves the protective material of Roitman while the EL material of Roitman is insoluble in said solvent. One would have been motivated to do so in order to have prevented the dissolution of the EL material and degradation of the luminous properties.

Claim 2: Roitman teaches that the substrate can be made of glass (col. 2, line 42).

Claim 54: Roitman teaches that the functional material can be an organic EL material (col. 1, lines 12-13) (i.e., an organic electro-optically active material).

5. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roitman '419 in view of Unger '878 and Kashiwabara '139 as applied to claim 1 above, and further in view of Miyashita et al. (U.S. Publication 2002/0136823).

Roitman, Unger, and Kashiwabara are discussed above, but do not explicitly teach that the substrate comprises a charge injection layer. However, Miyashita teaches a method of making an EL device (abstract), wherein a common charge injection layer 815 can be formed above the electrode 801,802,803 prior to patterning of the EL material 806,807,808 (Fig. 5). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed a charge injection layer on the substrate of Roitman with a reasonable expectation of success because Miyashita teaches that such an EL structure is operable. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

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6. Claims 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roitman '419 in view of Unger '878 and Kashiwabara '139 as applied to claim 1 above, and further in view of Rasmussen (U.S. Publication 2001/0015318).

Roitman, Unger, and Kashiwabara are discussed above, but do not explicitly teach that the protective material comprises poly(vinyl alcohol) (PVA). However, Rasmussen teaches that PVA-based photoresists are well-known in the art [ 0051]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a PVA-based photo-resist as the particular photo-resist of Roitman with a reasonable expectation of success because Rasmussen teaches that PVA is suitable for use as photo-resist materials. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

7. Claims 40 and 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roitman '419 in view of Unger '878, and Kashiwabara '139 as applied to claim 1 above, and further in view of Friend (WO 99/12398).

Roitman, Unger, and Kashiwabara are discussed above, but do not explicitly teach that a second protective material is applied subsequent to step (a), is removed in the well-defined regions in step (b), and is subsequently removed.

Roitman teaches that the protective material is formed using conventional photo-resist masking techniques (col. 3, lines 30-36), but is silent as to whether the mask is separate from the substrate or deposited onto the substrate. One of ordinary skill in the art would have recognized that either method of masking the photo-resist material would have been operable. Friend teaches that an aluminum layer (i.e., the second protective layer) deposited onto the photo-resist layer can be used as a mask to etch the photo-resist layer (pg. 12, 1<sup>st</sup> paragraph). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used aluminum as the particular mask of Roitman with a reasonable expectation of success because Friend teaches that such materials are operable for forming a masking layer for photo-resist materials. The selection of something based on its known suitability for its intended use has

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been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Claims 43-44: Friend teaches that the second protective layer can be made of aluminum as discussed above.

Claim 45: Roitman teaches that the protective layer can be patterned using conventional photo-resist techniques and Friend teaches that the second protective layer (i.e., the aluminum mask) can be patterned via reactive ion etching (pg. 12, 1<sup>st</sup> paragraph).

8. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roitman '419 in view of Unger '878, Kashiwabara '139, and Friend (WO 99/12398) as applied to claim 45, and further in view of Oswald et al. (U.S. Publication 2002/0011641).

Roitman, Unger, Kashiwabara, and Friend are discussed above, but do not explicitly teach that the second protective layer made of aluminum can be patterned via laser ablation. However, Oswald teaches that patterning aluminum films by ablation with a laser is a well-known technique [0049]-[0050]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used laser ablation as the particular method of patterning the aluminum protective layer of Friend with a reasonable expectation of success because Oswald teaches that such methods are operable for patterning aluminum layers. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

9. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roitman '419 in view of Unger '878 and Kashiwabara '139 as applied to claim 1 above, and further in view of Kim et al. (U.S. Patent 6,146,715).

Roitman, Unger, and Kashiwabara are discussed above, but do not explicitly teach that the protective material is removed from the well-defined regions via laser ablation. However, Kim teaches a method of making an EL device, wherein portions of the substrate are exposed via exposure to a laser beam (col. 5, lines 12-16; Figs. 7A-8K). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a laser etching

method as the particular method to form the well-defined regions of Roitman with a reasonable expectation of success because Kim teaches that such techniques are operable for exposing portions of an EL substrate. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

10. Claims 51-53, and 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roitman '419 in view of Unger '878 and Kashiwabara '139 as applied to claim 1 above, and further in view of Li (U.S. Patent 6,399,224) and Kim '715.

Claim 51: Roitman, Unger, and Kashiwabara are discussed above, but do not explicitly teach that EL material is deposited via spin coating. However, Li teaches that deposition of an EL material via spin coating can form a uniform film. Such a uniform film will be able to emit a uniform spectrum of light. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used spin coating as the particular method of depositing the EL material of Roitman, as opposed to a dispenser as taught by Roitman. One would have been motivated to do so in order to have formed an EL device that has a uniform display of light.

Spin coating is a non-selective type coating method. In other words, the entire substrate will be coated with the EL material when using spin coating. The EL layers 108 of Roitman will all be the same color if the deposition method is used with the method of forming the protective layer as disclosed by Roitman. However, Roitman teaches that the EL material disposed in a first well-defined region emits a different spectrum of light from the EL material dispensed in a second well-defined region (col. 2, lines 6-9). In order to take advantage of the spin coating method as taught by Li, the method of forming the protective layer must be modified.

Kim teaches a method of making an EL device (abstract). Referring to Figs. 8A-8I, a protective layer 104 is first deposited onto the substrate, a well-defined region is exposed for a first color, and the EL material 105a for that color is deposited into the well-defined region. The process is repeated again for the EL material 105b of a different color. One of ordinary skill in the art would have adopted this method of forming protective layers such that only well-defined regions for a particular color is exposed at a time in order to benefit from the advantages of spin coating. Therefore, it would have been obvious to one of ordinary skill in the art at the time of

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invention to have used the method of forming protective layers and exposing well-defined regions as taught by Kim for the method of making an EL device of Roitman because Kim teaches that such methods are operable for making an EL device.

Claim 57 is rejected for substantially the same reasons as discussed immediately above for claim 51. See Figs. 8E-8F of Kim.

Claim 52: Kim teaches that the protective layer is formed over the first EL material for the first color (Fig. 8D).

Claim 53: Roitman and Kim do not explicitly teach that the additional protective layer comprises the same protective material. However, using the same material as an additional layer for the same purpose is an obvious modification. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used the same protective material for forming the additional layer. One would have been motivated to do so in order to have reduced the number of different materials used.

Claim 56: Roitman, Unger, Kashiwabara, Li, and Kim do not explicitly teach that the patterning of second EL material comprises the steps of repeating the steps for patterning the first EL material. In particular, the combination of references does not teach the step of removing the protective layer prior to patterning of the second EL material. However, there are only two method of steps for removing the protective layer: removing after deposition of all the EL layers or after the deposition of each EL material color. One of ordinary skill in the art would have recognized that using either method would have obtained similar results and, thus, would have selected either method for forming an EL device. It would have been obvious to one of ordinary skill in the art at the time of invention to have removed the protective layer after the deposition of each EL material color, as opposed to removing after the deposition of all the EL layers, with a reasonable expectation of success because one of ordinary skill in the art would have recognized that the two methods are operable equivalents.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.




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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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**KEITH HENDRICKS**  
**PRIMARY EXAMINER**